

# **Guest OS Installation for vBlades: Red Hat Enterprise Linux 4.5**

**For BladeFrame® BF400 S2 and BladeFrame® BF200**

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**vBlades Release VBXS2.1\_BF**

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# Preface

If you have the vBlades option of PAN Manager, you can use this document to install **Red Hat Enterprise Linux 4.5** (RHEL4.5) ES or AS as the guest operating system (OS) for a pServer on a vBlade. If appropriate, you can then obtain and apply Red Hat updates to upgrade that OS to **Red Hat Enterprise Linux 4.6** (RHEL4.6).

**Audience** — This document is for PAN Administrators and LPAN Administrators.

**Topics** — This document provides information on the following topics:

- [Installing RHEL4.5 for vBlade pServers](#)
- [Non-interactive Installation for RHEL4.5 Guests](#)
- [Creating RHEL4.5 Guests from Root Disk Images](#)
- [Running RHEL4.5 Guests in Rescue Mode](#)
- [Upgrading RHEL4.5 Guests](#)
- [Upgrading RHEL4.4 Guests](#)

**Other vBlades Documentation** — To learn about vBlades, see the following document included in the PAN Manager PM5.2\_BF documentation:

- [\*Using vBlades\*](#)

To learn about installing the hypervisor and related software required to support vBlades in your PAN, see this document:

- *Installing the vBlades Media*

To learn about installing other guest operating systems for vBlade pServers, see the following documents:

- *Guest OS Installation for vBlades: Red Hat Enterprise Linux 3.8*
- *Guest OS Installation for vBlades: Red Hat Enterprise Linux 5.1*
- *Guest OS Installation for vBlades: SUSE Linux Enterprise Server 9.3*
- *Guest OS Installation for vBlades: SUSE Linux Enterprise Server 10.1*
- *Guest OS Installation for vBlades: Microsoft Windows*

All of the vBlades installation documents are provided on the [vBlades Media](#).

If you don't have the document you need, contact Fujitsu Siemens Computers customer support or your authorized support vendor for assistance.

**vBlades Release Notes** — For release notes related to vBlades, access the following documents from <http://www.fujitsu-siemens.com/support>:

- *PAN Manager Release Notes: Release PM5.2\_BF*
- *Hypervisor and Guest Release Notes for vBlades VBXS2.1\_BF*

**PAN Manager Documentation Set** — To learn about the other documents available in the PAN Manager documentation set, see the *PAN Manager Feature Summary*.

**PAN Manager Features** — To learn about the PAN Manager features available in the current release, see the *PAN Manager Feature Summary*.

# vBlades Media

The term **vBlades Media** used in this document refers to the *vBlade Hypervisor and Virtualization Tools* DVD, which contains the software distribution for the vBlades option of PAN Manager.

Contents of the vBlades Media include:

Contents	Directory
vBlades install documentation (for the media and guests)	/egenera
vBlades Media install program	/egenera See the document <i>Installing the vBlades Media</i> for details.
Supplementary files for specific guest installs	For <b>RHEL3.8</b> guest installs: /egenera For <b>SLES9.3</b> guest installs: /egenera /linux For <b>SLES10.1</b> guest installs: /sles10_linus See the corresponding guest documentation for details.

# Customer Support

If you require customer support regarding this product, use the following contact information.

## Fujitsu Siemens Computers customer support

<b>Internet</b>	<a href="http://www.fujitsu-siemens.com/support">http://www.fujitsu-siemens.com/support</a>
<b>Telephone</b>	See the Help Desk information at <a href="http://manuals.fujitsu-siemens.com/primergyservers.html">http://manuals.fujitsu-siemens.com/primergyservers.html</a> under General Information, Warranty and Support.

# Document Conventions

Convention	Description
>	Directory-level delimiter used to navigate the left pane of the PAN Manager GUI.  <b>Example:</b> Resources > Ethernet Connections
<i>Sans serif italics</i>	Variable text, such as a path, a filename, or an LPAN name.  <b>Example:</b> <code>lpan -c /panname</code>
Sans serif	Text that must be typed as shown.  <b>Example:</b> Type <code>root</code> at the login prompt.

Convention	Description
<b>Bold</b>	The name of a field or window element appearing in a GUI. It also highlights default values in PAN Manager man pages.  <b>Example:</b> In the <b>Users</b> page...
<i>Italics</i>	Text that is emphasized.  <b>Example:</b> Do <i>not</i> connect the power.
[ <i>text</i> ]	Text that is optional to a command.
{ <i>text</i> }	A set of choices, one of which is required.
	Separation of mutually exclusive choices in syntax lines.  <b>Example:</b> l pan [-aD   -rD]{ <i>swi tch</i>   <i>SCSI_ID</i> } <i>panname</i>
<b>Note</b>	Information of importance or that may not fit in main text.
<b>Caution</b>	Failure to heed a caution could result in loss of data.
	<b>Warning</b> — Failure to heed a warning could result in physical harm to the user or the hardware.



# Chapter 1

## Installing RHEL4.5 for vBlade pServers

This chapter tells you how to install **Red Hat Enterprise Linux 4.5** (RHEL4.5) ES or AS as the guest OS for a pServer on a vBlade. Topics include:

- [About RHEL4.5 as a Guest OS](#)
- [If You Need RHEL4.6](#)
- [Before You Install RHEL4.5](#)
- [Installing RHEL4.5](#)
- [Booting RHEL4.5 on Your vBlade pServer](#)
- [Installing the Xen Guest Agent](#) (to support migration operations)

### **Important:**

- You must have the **vBlades option**, which provides the Xen and guest OS software that you need from Fujitsu Siemens Computers.

See the chapter “Installing Guest Operating Systems for vBlade pServers” in the *Using vBlades* book.

- You must be aware of **restrictions** that apply when you work with vBlades and this guest OS.

See the chapter “About vBlades” in the *Using vBlades* book.

## About RHEL4.5 as a Guest OS

Here are the basics about installing and using RHEL4.5 as the guest OS for a pServer on a vBlade:

- **Guest OS type** — RHEL4.5 is supported as a paravirtualized guest OS.
- **Install approach** — You'll install a paravirtualized (PV) kernel from the standard RHEL4.5 distribution, with the help of a customized installer from Fujitsu Siemens Computers. The PV kernel is provided by the OS vendor and tailored to work with the Xen hypervisor.
- **pBlade requirements** — You can run this guest OS on a vBlade regardless of whether the underlying pBlade provides hardware virtualization support (via its processor architecture and feature set).
- **Mode support** — 32-bit only.

For more background information on vBlades, the hypervisor, and how guest operating systems fit in, see the chapter “About vBlades” in the *Using vBlades* book.

## If You Need RHEL4.6

To use an RHEL4.6 guest, **first install RHEL4.5** via the RHEL4.5 installer provided with the vBlades software (as described in this chapter). **Then upgrade to RHEL4.6** by obtaining the applicable updates from Red Hat and applying them via the normal Red Hat tools and procedures.

See [Chapter 5, “Upgrading RHEL4.5 Guests”](#).

## Before You Install RHEL4.5

Before you start the RHEL4.5 install, you must perform the following steps:

1. **Obtain the standard install media** for Red Hat Enterprise Linux 4.5 from the operating system vendor.
2. **Copy the contents** of that standard RHEL4.5 install media to a server in your network that is accessible from the target pServer via **NFS or HTTP**.
3. **Check the hardware requirements** for RHEL4.5 (as specified by the operating system vendor) and vBlades (as specified in the chapter “About vBlades” in the *Using vBlades* book) to **select an underlying pBlade** with suitable memory and other characteristics.
4. **Configure and boot the hypervisor** on your pBlade. For example, in the PAN Manager CLI:

```
# blade --boot-hypervisor myplatform/p3
```

This powers on your pBlade and boots the default hypervisor. For details on configuring and booting the hypervisor, see one of the following:

- GUI users: the chapter “Administering vBlades” in the *Using vBlades* book
- CLI users: the chapter “PAN Manager CLI Commands for vBlades” in the *Using vBlades* book

5. **Configure a vBlade** on your pBlade.

For example, in the PAN Manager CLI, create your vBlade and give it the amount of **memory** and number of **CPUs** you need:

```
# blade -c -M 1"Gb" -P 2 myplatform/p3-1
```

For details on configuring a vBlade, see one of the following:

- GUI users: the chapter “Administering vBlades” in the *Using vBlades* book

- CLI users: the chapter “PAN Manager CLI Commands for vBlades” in the *Using vBlades* book

**6. Configure your pServer** on the vBlade. For example, in the PAN Manager CLI:

- Create the pServer** in your LPAN:  
`# pserver -c myl pan/rhel 4`
- Assign your vBlade** as the pServer’s primary blade:  
`# pserver -B myl atform/p3-1 myl pan/rhel 4`
- Specify the pServer’s default boot image** as EVBS (Egenera Virtualized Boot Services):  
`# pserver -I EVBS myl pan/rhel 4`

Your PAN contains one or more different versions of the EVBS boot image to choose from. EVBS is used after the install to boot the pServer into the installed RHEL4.5 operating system. (You’ll learn more about EVBS and its use in [“Booting RHEL4.5 on Your vBlade pServer” on page 1-10.](#))

- Connect the pServer** to the same network as your NFS or HTTP server (where you copied the standard RHEL4.5 install media in [Step 2](#)) by adding a **vEth** to the pServer and connecting that vEth to an appropriate **vSwitch**:  
`# pserver -a myvswi tch myl pan/rhel 4 veth0`

If the NFS or HTTP server resides on an **external network**, your vSwitch must have a corresponding **uplink**.

- Attach a SAN disk** (identified by its disk device ID) to be used as the pServer’s root disk:

`# pserver -a "(9.0.3.95)" myl pan/rhel 4 "(0.0)"`

This **must be the pServer’s first disk** — specified as “(0.0)” here, which maps to xvda in the guest. Later, when you install RHEL4.5, you’ll need to specify this disk’s first partition (/dev/xvda1) as the boot partition.

7. **Erase the partition table** on that disk — this is required to ensure a successful install. For example, in the PAN Manager CLI:

```
# cat > /tmp/empty.part << EOF
1 0 0
2 0 0
3 0 0
4 0 0
EOF
# disk -p /tmp/empty.part "(9.0.3.95)"
Disk partitioned successfully.
# rm -f /tmp/empty.part
```

8. Now you're ready to start the install. Go to [“Installing RHEL4.5”](#).

# Installing RHEL4.5

Make sure you have finished the steps in [“Before You Install RHEL4.5” on page 1-4](#).

To perform the RHEL4.5 install interactively, follow these steps:

1. **Boot your pServer**, but override the default boot image to do a one-time boot of `VBXS21_RHEL450nnnnl_1A32`, a customized RHEL4.5 install kernel provided by Fujitsu Siemens Computers. (It should already be registered in your PAN as described in the document *Installing the vBlades Media*.) This **starts the RHEL4.5 install**.

For example, in the PAN Manager CLI:

```
# pserver -b -l VBXS21_RHEL450nnnnl_1A32 myl pan/rhel 4
```

`VBXS21_RHEL450nnnnl_1A32` represents a tftp boot image file (`/tftpboot/bzImage-Xen-RHEL4-1A32-inst1-4.5.0-nnnn.tftp`). Replace `nnnn` with the version number of this image in your PAN; for a list of registered images, enter:

```
# pan -i
```

**Caution:** During the RHEL4.5 install, **do not add disks** to the pServer. Adding disks during this install can cause the install to fail or can leave the pServer in an unpredictable state, requiring you to reinstall.

2. **Open the pServer’s console** (with terminal type set to vt220, as described below). For example, in the PAN Manager CLI:

```
# consol e myl pan/rhel 4
```

**Note:** For optimal display of installer screens in the pServer console, **set the console’s terminal type to vt220**. (You may still notice some minor screen display and refresh issues.) If using the PAN Manager CLI, switch to vt220 before executing

the console command. If using the PAN Manager GUI, right-click in the console window and select **Settings>Terminal** to switch to vt220.

You should eventually see the **initial screen of the RHEL4.5 install**:

```
Welcome to Red Hat Enterprise Linux
Choose a Language
```

3. **Follow the screen prompts** to specify details of the RHEL4.5 install.

As you proceed through the RHEL4.5 install screens, note that **some screens require specific responses** to meet the needs of a vBlade pServer. [Table 1.1](#) lists those screens and what you need to specify.

**Note:** If you plan to later make a **root disk image** from the pServer you're installing, you must adhere to the requirements listed in [Chapter 3, “Creating RHEL4.5 Guests from Root Disk Images”](#).

Table 1.1 RHEL4.5 Install Screens with Specific Requirements for vBlade pServers

On This RHEL4.5 Install Screen	Do This
Installation Method	Select <b>NFS image</b> or <b>HTTP</b> . (Only these installation methods are currently supported for RHEL4.5 on a vBlade pServer.)

On This RHEL4.5 Install Screen	Do This
Disk Partitioning Setup	<p>Select either <b>Autopartition</b> or <b>Disk Druid</b> to partition the pServer's SAN disk (xvda). Whichever you use, make sure your partitioning of this disk follows these rules:</p> <ul style="list-style-type: none"> <li>• <b>/boot</b> is in the first partition (/dev/xvda1)</li> <li>• <b>ext3</b> or <b>ext2</b> is the file system type for the partition(s) that contain the boot and root file systems</li> <li>• <b>Logical volumes</b> are supported</li> </ul> <p>For example, you can create a single root partition for the disk (/dev/xvda1), or create separate partitions for /boot (/dev/xvda1) and / (/dev/xvda2).</p> <p>Swap partitions are also supported, as usual.</p>
Boot Loader Configuration	<p>Select <b>Use GRUB Boot Loader</b>.</p> <p>When you're prompted for options to pass to the kernel, <b>accept the default options</b>.</p> <p>When you're prompted about a boot loader password, <b>don't use a GRUB password</b>.</p> <p>When you're prompted about partitions to boot and their labels in the boot manager, <b>accept the default label and partition</b>:</p> <p>Red Hat Enterprise Linux AS /dev/xvda1</p> <p>When you're prompted about where to install the boot loader, <b>accept the default boot loader location</b>:</p> <p>/dev/xvda Master Boot Record (MBR)</p>

4. When the **Installation to begin** screen appears, select **OK** to start installing RHEL4.5 on the pServer's root disk according to your specifications.

5. When the RHEL4.5 install is done and the **Complete** screen appears, select **Reboot** to reboot your pServer on its vBlade.

The pServer now boots into the installed **RHEL4.5 operating system**. (RHEL4.5 displays a **Setup Agent** screen on your initial boot.)

## Booting RHEL4.5 on Your vBlade pServer

After the one-time boot of the RHEL4.5 install kernel is over, subsequent boots of your vBlade pServer use the **default boot image** that you specified earlier (in “[Before You Install RHEL4.5](#)” on page 1-4). That image, EVBS, boots the pServer into the installed RHEL4.5 operating system.

EVBS flags PAN Manager to perform a **disk boot** of RHEL4.5 for the vBlade pServer. The disk boot works by loading the appropriate kernel, boot options, and RAM disk (as needed) from the `/boot` partition (`/dev/xvda1`) of the pServer’s root disk (`xvda`).

## Installing the Xen Guest Agent

If you plan to perform **migration operations** involving your installed vBlade pServer, you must also install the **Xen guest agent** on it. The Xen guest agent provides the pServer with capabilities it requires to participate in these operations.

To install the Xen guest agent, follow these steps:

1. Make sure that your **guest OS is running** on its vBlade pServer.
2. **Insert VBXS21\_TOOLS**, a registered media image, in the VCD drive of the pServer. For example, in the PAN Manager CLI:  
`# pserver --insert-vcd VBXS21_TOOLS myl pan/rhel 4`

**Note:** If the VCD drive currently contains some other image, type this first: `# pserver --eject-vcd myl pan/rhel 4`.

`VBXS21_TOOLS` contains an **installer tool** (`/Linux/install.sh`) for installing the Xen guest agent.

3. **Log on** to the pServer’s console as `root`.

**4. Mount the VCD on the pServer:**

```
# mount /dev/hdd /mnt
```

**5. Run `/Li nux/i nstal l . sh` from the VCD on the pServer, and include the `-k` option (required to install just the Xen guest agent and skip kernel installation):**

```
# /mnt/Li nux/i nstall . sh -k
```

For more information on migration operations, see the *Using vBlades* book.



# Chapter 2

## Non-interactive Installation for RHEL4.5 Guests

This chapter tells you how to perform a non-interactive install of a Red Hat Enterprise Linux 4.5 (RHEL4.5) guest for a vBlade pServer. Topics include:

- [About Non-interactive Installs](#)
- [Performing a Non-interactive Install](#)

For general information on RHEL4.5 guests and details on performing an interactive installation, see [Chapter 1, “Installing RHEL4.5 for vBlade pServers”](#).

## About Non-interactive Installs

In [Chapter 1, “Installing RHEL4.5 for vBlade pServers”](#), you learned how to install an RHEL4.5 guest **interactively**. That approach is useful for your first RHEL4.5 guest, because the installer:

- Walks you through the details of the install
- Creates a **kickstart configuration file** on the guest’s disk that captures the parameters you specify (in response to the prompts) during the install:

`/root/anaconda-ks.cfg`

If you have additional RHEL4.5 guests to install, you may find it handy to install them **non-interactively** via this kickstart file. That way, you can use the kickstart file as a template for performing similar guest installs in an unattended manner.

## Performing a Non-interactive Install

To perform a non-interactive install of an RHEL4.5 guest, follow these steps:

1. **Examine** the generated kickstart file and **edit** it as needed for your target guest install.

Make sure you follow the guidelines in [Table 1.1 on page 1-8](#) when editing installation parameters.
2. Copy your edited kickstart file to an **NFS server** (on the same network as your target pServer).
3. Go to [“Before You Install RHEL4.5” on page 1-4](#) (in [Chapter 1, “Installing RHEL4.5 for vBlade pServers”](#)) and **perform all of the steps** in that section.

4. Go to “[Installing RHEL4.5](#)” on page 1-7 and perform the first two steps to **boot the pServer and open its console**. The only difference is that your boot command must include boot arguments to specify the **kickstart file and device** to use. For example, in the PAN Manager CLI:

```
# pserver -b -I VBXS21_RHEL450nnnnI_1A32 -K  
"ks=nfs:IP_addr:/pathname ksdevl ce=eth0" myl pan/  
rhel 4
```

where *IP\_addr* is the IP address of the NFS server that contains the kickstart file, and *pathname* is the location of the kickstart file.

The non-interactive RHEL4.5 install begins. Skip to the end of that section when it’s time for the installed pServer to **reboot**.



# Chapter 3

## Creating RHEL4.5 Guests from Root Disk Images

This chapter describes how you can use a root disk image (instead of the install process) to set up a new Red Hat Enterprise Linux 4.5 (RHEL4.5) guest for a vBlade pServer. Topics include:

- [About Root Disk Images](#)
- [Preparing an RHEL4.5 Root Disk Image](#)
- [Using an RHEL4.5 Root Disk Image for a vBlade pServer](#)

For general information on RHEL4.5 guests and details on performing an interactive installation, see [Chapter 1, “Installing RHEL4.5 for vBlade pServers”](#).

## About Root Disk Images

In [Chapter 1, “Installing RHEL4.5 for vBlade pServers”](#), you learned how to set up an RHEL4.5 guest by stepping through the OS install process. That approach is recommended for your first RHEL4.5 guest, but there’s an alternative technique that can save you time and effort when creating additional guests of the same type.

This technique involves preparing and using a **root disk image**. It requires you to:

1. **Package** directories and files copied from the root disk of an existing RHEL4.5 guest into a root disk image
2. **Register** that root disk image with PAN Manager
3. **Root** one or more disks with that image, then **associate** each resulting RHEL4.5 guest disk with a new vBlade pServer

### Requirements

You must adhere to the following requirements when working with root disk images:

- **Disk partitioning** The guest root disk from which you create a root disk image must have exactly **one partition for the OS**. The root partition (/) should be /dev/xvda1.

That root disk may also have a **swap partition**, and the /etc/fstab file in the root disk image will refer to it. In this scenario, after you root a new disk from your root disk image and boot the resulting guest OS, you must **initialize** the swap partition before use; for details, see [“Using an RHEL4.5 Root Disk Image for a vBlade pServer”](#) on page 3-6.

- **Guest must not use LVM** The root disk image must be created from a non-LVM guest (LVM is the Logical Volume Management feature of Linux). Make sure that guest’s root device is a **SCSI device** (/dev/xvda1), instead of an LVM device such as /dev/Vol Group00/LogVol 00.

# Preparing an RHEL4.5 Root Disk Image

Preparing an RHEL4.5 root disk image for use involves:

1. [Packaging the Root Disk Image](#)
2. [Registering the Root Disk Image](#)

## Packaging the Root Disk Image

Perform these steps in the PAN Manager CLI:

1. **Log on** to the pServer console of your existing RHEL4.5 guest:

```
# console /pan_name/pserver_name
```

2. **Create a directory** named `/image_dir` to use in making the root disk image:

```
# mkdir /image_dir
```

3. **Create a temporary file** named `/tmp/ex_file` to hold the list of directories and files that you want to exclude from the tar file you'll be making for the root disk image.

**Note:** All entries in the file must start with dot slash (./). Entries can contain wildcards (\*).

Insert the following entries in the `/tmp/ex_file` file:

```
./sys/*
./initrd/*
./tmp/*
./proc
./image_dir
```

4. Make sure that you are at the **root directory**:

```
# cd /
```

5. **Create a tar file** of the root disk and write the operation to a log file:

```
# tar -cv -X /tmp/ex_file -f /image_dir/guest-root-RHEL4-U5-32bit.tar --preserve . > /tmp/tar.log 2>&1
```

**Note:** Be sure to use the dot character (.) after the --preserve option.

**If you do not have enough space** in `/image_dir`, the tar operation fails with a message similar to `/image_dir/guest-root-RHEL4-U5-32bit.tar Wrote only 46800 of 205574 bytes`. If this occurs, choose a different location (directory or mount point) to which to write the tar file, and change the `/tmp/ex_file` entry of `./image_dir` to be the name of the new directory or mount point; the name must start with dot slash (`./`).

You can **check for errors** in the log files created by this procedure. Good practice is to use grep; for example:

```
# grep tar: /tmp/tar.log
```

You can ignore tar: log entries that contain socket ignored.

6. When you finish creating `guest-root-RHEL4-U5-32bit.tar`, **open the file** by using the following commands (assuming that your root disk image is in the `image_dir` directory):

```
# mkdир /image_dir/hold
# cd /image_dir/hold
# tar xvf /image_dir/guest-root-RHEL4-U5-32bit.tar
--preserve > /tmp/tar.log2 2>&1
```

7. **Remove any unnecessary files** (such as log files, history files, or ssh keys) from the extracted contents.
8. **Edit /etc/fstab** (in the extracted contents) as follows:

- **Replace each LABEL=value entry** that appears in the left-most column with a valid disk partition. For example, you would replace `LABEL=/` with `/dev/xvda1`.
- **Remove the initial comment line:**

```
# This file is edited by fstab-sync - see 'man
fstab-sync' for details
```

and make sure that line 1 of the file now specifies the default **file system type**. For example:

```
/dev/xvda1 / ext3 defaults 1 1
```

This is **required** to enable the pServer to determine the root file system at boot time.

9. **Edit /boot/grub/grub.conf** (in the extracted contents) as follows:

Find the `root= kernel argument for the Xen kernel entry and replace the LABEL syntax with a valid disk partition (this root partition must be the same one you specified for /etc/fstab). For example, you would change:`

```
kernel /boot/vml i nuz-2. 6. n-n. ELxenU ro
root=LABEL=/ consol e=xvc0 rhgb quiet
i ni trd /boot/i ni trd-2. 6. n-n. ELxenU. img
```

to:

```
kernel /boot/vml i nuz-2. 6. n-n. ELxenU ro
root=/dev/xvda1 consol e=xvc0 rhgb quiet
i ni trd /boot/i ni trd-2. 6. n-n. ELxenU. img
```

10. **Edit /etc/sysconfig/network-scripts/ifcfg-eth0** (in the extracted contents) to remove the entire `HWADDR` entry (which specifies a hardcoded MAC address).

You must remove this entry to avoid MAC address problems with `eth0` when booting.

11. **Edit other configuration files** (in the extracted contents), as needed.

12. **Change directory** to `/image_dir/hold` (assuming that your root disk image is in the `image_dir` directory) if you aren't already there:

```
# cd /image_dir/hold
```

13. Create a **mount point** for the `egenera` directory in the proc file system:

```
# mkdir -p proc/egenera
```

14. **Remove** the existing tar file:

```
# rm /image_dir/guest-root-RHEL4-U5-32bit.tar
```

15. **Recreate and compress** the tar file:

```
# tar -czvf /image_dir/guest-root-RHEL4-U5-
32bit.tar.gz --numeric-owner --preserve . >
/tmp/tar.log3 2>&1
```

**Note:** Be sure to use the dot character (.) after the --preserve option.

16. **Copy the root disk image** to the /crash\_dumps directory on one of your cBlades (specified by its IP address). For example:

```
# scp /image_dir/guest-root-RHEL4-U5-32bit.tar.gz  
136.106.187.122:/crash_dumps
```

17. To **end the console session** on the pServer, enter:

```
# ~.
```

## Registering the Root Disk Image

Perform these steps in the PAN Manager CLI:

1. **Log on** to the same cBlade specified in [Step 16](#) of the previous procedure.
2. **Register** your new RHEL4.5 root disk image with PAN Manager:  

```
# pan -a -R -C /crash_dumps/guest-root-RHEL4-U5-  
32bit.tar.gz -F fs_type -T os_type -P description  
root_image_name
```
3. **Delete your temporary copy** of the root disk image (/crash\_dumps/guest-root-RHEL4-U5-32bit.tar.gz).

## Using an RHEL4.5 Root Disk Image for a vBlade pServer

Once you have registered an RHEL4.5 root disk image, you can use it to **set up one or more RHEL4.5 guests** on vBlade pServers. Here are the steps to perform in the PAN Manager CLI for each guest:

1. **Prepare a disk** that you want to use by creating the appropriate partition(s) on it, such as a Linux partition and a Linux Swap partition.

2. **Root that disk** with your RHEL4.5 root disk image:

```
# disk -R -r root_image_name "(SCSI_ID)"
```

3. **Associate** the resulting RHEL4.5 guest disk with an appropriate vBlade pServer (a pServer assigned to a vBlade):

```
# pserver -a "(SCSI_ID)" lpan_name/pserver_name "(0.0)"
```

This **must be the pServer's first disk** — specified as "(0.0)" here, which maps to xvda in the guest.

4. **Specify the default boot image** as EVBS, just as you usually do for an RHEL4.5 guest on a vBlade pServer:

```
# pserver -l EVBS lpan_name/pserver_name
```

5. **Boot** your new RHEL4.5 guest on the vBlade pServer:

```
# pserver -b lpan_name/pserver_name
```

6. **If this guest uses a swap partition**, perform the following steps to initialize it:

- a. **Log on** to the pServer's console as **root**.

- b. **Examine** **/etc/fstab** to make sure that it contains an entry representing the swap partition. (This file should include that entry if the original pServer used a swap partition.)

- c. Run the **mkswap** command for your swap partition.

- d. Run the **swapon -a** command.



# Chapter 4

## Running RHEL4.5 Guests in Rescue Mode

After you have installed a Red Hat Enterprise Linux 4.5 (RHEL4.5) guest for a vBlade pServer, you have the option of running that guest in **rescue mode** when necessary. Rescue mode can help you access and repair your operating system when a problem occurs.

To run an RHEL4.5 guest in rescue mode, follow these steps in the PAN Manager CLI:

1. Boot or reboot your pServer from the **customized RHEL4.5 install kernel** provided by Fujitsu Siemens Computers (VBXS21\_RHEL450nnnnl\_1A32) and include the `rescue` boot argument. For example:

To **boot** a shutdown pServer in rescue mode:

```
# pserver -b -I VBXS21_RHEL450nnnnl_1A32 -K rescue  
/pan_name/pserver_name
```

To **reboot** a running pServer in rescue mode:

```
# pserver -x -f -I VBXS21_RHEL450nnnnl_1A32 -K rescue  
/pan_name/pserver_name
```

2. Open the pServer's **console**:

```
# console /pan_name/pserver_name
```

You should eventually see the **initial RHEL4.5 install screen**:

Welcome to Red Hat Enterprise Linux  
Choose a Language

3. **Follow the screen prompts** to specify details of the RHEL4.5 rescue and start working in the rescue mode shell.
4. **When you finish** examining and/or repairing your system, exit from the rescue mode shell:

```
# exit
```

This **automatically invokes a reboot** of your RHEL4.5 guest on the vBlade pServer, using the default boot image (EVBS). If a problem occurs, you can repeat the rescue process and make further repairs.

# Chapter 5

## Upgrading RHEL4.5 Guests

After you've installed an RHEL4.5 guest (according to the instructions earlier in this document), you can **apply updates** from the operating system vendor to the OS and kernel when needed.

To apply such updates, **use the OS vendor's tools and procedures**. No special steps are required.

This is the approach to follow if you need to **upgrade from RHEL4.5 to RHEL4.6**. Obtain the RHEL4.6 updates from Red Hat and apply them to your RHEL4.5 OS as directed by Red Hat.

If you plan to perform **migration** operations involving an existing RHEL4.x guest, you must also install the latest **Xen guest agent** on that vBlade pServer. For details, see "[Installing the Xen Guest Agent](#)" on page 1-10 (in Chapter 1, "Installing RHEL4.5 for vBlade pServers").



# Chapter 6

## Upgrading RHEL4.4 Guests

This chapter describes how to manage **existing RHEL4.4 guests** when you upgrade to a new release of the vBlades Media and hypervisor. Topics include:

- [Deciding When to Upgrade](#)
- [Upgrading to the OS Vendor RHEL4.5 PV Kernel](#)

To learn about other aspects of upgrading vBlade software, see the chapter “Upgrading vBlade Software” in the *Using vBlades* book.

## Deciding When to Upgrade

When you upgrade from an earlier release of the [vBlades Media](#) to **release VBXS2.1**, the default hypervisor version in your PAN changes to **VBXS Hypervisor v2.1**. This has some implications for existing RHEL4.4 guests.

VBXS Hypervisor v2.1 supports RHEL4.4 guests that you originally installed on vBlade pServers under earlier hypervisor versions. You can run these guests as-is on VBXS Hypervisor v2.1.

Release VBXS2.1 of the vBlades Media **does not provide any updates** to the RHEL4.4 PV (paravirtualized) kernel from Fujitsu Siemens Computers. If you want to upgrade from the existing RHEL4.4 PV kernel, the recommended action is to **switch to the RHEL4.5 (or later) PV kernel provided by the OS vendor** (Red Hat); for more information, see the section [“Upgrading to the OS Vendor RHEL4.5 PV Kernel”](#).

If you plan to perform **migration** operations involving an existing RHEL4.x guest, you must also install the latest **Xen guest agent** on that vBlade pServer. For details, see [“Installing the Xen Guest Agent”](#) on page 1-10 (in Chapter 1, “[Installing RHEL4.5 for vBlade pServers](#)”).

## Upgrading to the OS Vendor RHEL4.5 PV Kernel

There’s a specific procedure to follow to successfully upgrade an existing RHEL4.4 guest to the Red Hat RHEL4.5 (or later) PV kernel. To obtain these instructions, contact Fujitsu Siemens Computers customer support or your authorized support vendor.



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